AMENDENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-10. (Canceled)

Claim 11. (Currently Amended) An image processing apparatus, comprising:

an orthogonal transformer configured to transform multi-bit image data into orthogonal transform coefficients;

a quantizer configured to quantize the orthogonal transform coefficients for each spatial frequency of the muti-bit image data, the spatial frequencies including a DC component, low frequency AC components, and high frequency AC components, a first number of quantization bits being assigned to the DC component, a second number of quantization bits being assigned to all the low frequency AC components, a third number of quantization bits being assigned to all the high frequency AC components, the second number of quantization bits comprising a multiple of the first number of quantization bits, and the third number of quantization bits comprising a multiple of the first number of quantization bits;

a block data generator configured to generate a block of data, the block of data being composed of the quantized data of each spatial frequency;

a frequency banding section configured to rearrange the quantized data in the generated block of data so as to band the quantized data of each spatial frequency and so as to align the quantized data of a spatial frequency of the generated block of data with the quantized data of the same spatial frequency of the next generated block of

data, and to output, as bit serial data, the quantized data of the spatial frequency over a plurality of the rearranged blocks; and

a coder configured to compress the bit serial data.

Claim 12. (Canceled)

Claim 13. (Previously Presented) The image processing apparatus according to claim 11, wherein the coder compresses the bit serial data, using a coding system for facsimile communication.

Claim 14. (Previously Presented) The image processing apparatus according to claim 13, wherein the coding system includes a JBIG coding system.

Claim 15. (Previously Presented) The image processing apparatus according to claim 11, further comprising an editor configured to edit the quantized data of the block of data generated by the block data generator,

wherein the frequency banding section rearranges the edited quantized data.

Claim 16. (Previously Presented) The image processing apparatus according to claim 15, further comprising a memory configured to store the quantized data of the block of data generated by the block data generator,

wherein the editor rotates the quantized data by controlling a write address and a read address of the memory based on a control data, the control data indicating a rotation amount and a rotation direction.

Claim 17. (Previously Presented) The image processing apparatus according to claim 16, wherein the editor further adds rotation information to rotated quantized data for each page, the rotation information indicating the rotation amount and the rotation direction for each page.

Claim 18. (Previously Presented) The image processing apparatus according to claim 11, further comprising:

a decoder configured to decompress the compressed bit serial data;

a frequency data restoring section configured to restore the decompressed bit serial data to a predetermined block data, the predetermined block data including the quantized data of each spatial frequency;

an inverse quantizer configured to inverse quantize the quantized data for each spatial frequency, and to obtain orthogonal transform coefficients for each spatial frequency; and

an inverse orthogonal transformer configured to transform the orthogonal transform coefficients into multi-bit image data.

Claim 19. (Previously Presented) The image processing apparatus according to claim 11, further comprising:

a half-tone processor configured to half-tone process the multi-bit image data to obtain half-tone data;

a function selector configured to select the half-tone data when a facsimile transmission is selected, and to select the bit serial data when a copy operation is selected.

Claim 20. (Currently Amended) A multifunction apparatus, comprising:

an image inputting section configured to scan an original document and to obtain multi-bit image data;

an printer configured to print the multi-bit image data;

a communicator configured to transmit the multi-bit image data; and

an image processor, the image processor comprising:

an orthogonal transformer configured to transform the multi-bit image data into orthogonal transform coefficients;

a quantizer configured to quantize the orthogonal transform coefficients for each spatial frequency of the multi-bit image data, the spatial frequencies including a DC component, low frequency AC components, and high frequency AC components, a first number of quantization bits being assigned to the DC component, a second number of quantization bits being assigned to all the low frequency AC components, a third number of quantization bits being assigned to all the high frequency AC components, the second number of quantization bits comprising a multiple of the first number of quantization bits, and the third number of quantization bits comprising a multiple of the first number of quantization bits;

a block data generator configured to generate a block of data, the block of data being composed of the quantized data of each spatial frequency;

a frequency banding section configured to rearrange the quantized data in the generated block of data so as to band the quantized data of each spatial frequency and so as to align the quantized data of a spatial frequency of the generated block of data with the quantized data of the same spatial frequency of the next generated block of data, and to output, as bit serial data, the quantized data of the spatial frequency over a plurality of the rearranged blocks; and

a coder configured to compress the bit serial data.

Claim 21. (Currently Amended) An image processing method comprising:

transforming multi-bit image data into orthogonal transform coefficients;

quantizing the orthogonal transform coefficients for each spatial frequency of the muti-bit image data, the spatial frequencies including a DC component, low frequency AC components, and high frequency AC components, a first number of quantization bits being assigned to the DC component, a second number of quantization bits being assigned to all the low frequency AC components, a third number of quantization bits being assigned to all the high frequency AC components, the second number of quantization bits comprising a multiple of the first number of quantization bits, and the third number of quantization bits comprising a multiple of the first number of quantization bits;

generating a block of data, the block of data being composed of the quantized data of each spatial frequency;

rearranging the quantized data in the generated block of data so as to band the quantized data for each spatial frequency and so as to align the quantized data of a spatial frequency of the generated block of data with the quantized data of the same spatial frequency of the next generated block of data;

outputting, as bit serial data, the quantized data of the spatial frequency over a plurality of the rearranged blocks; and

coding the bit serial data.

Claim 22. (Previously Presented) The image processing method according to claim 21, further comprising:

decoding the compressed bit serial data;

restoring the decompressed bit serial data to a predetermined block data, the predetermined block data including the quantized data of each spatial frequency;

inversing quantize the quantized data for each spatial frequency;

obtaining orthogonal transform coefficients for each spatial frequency; and

transforming the orthogonal transform coefficients into multi-bit image data.